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AMENDMENTS TO THE CLAIMS

1/ (ORIGINAL) A cryogenic rotary coupling, comprising a first cryogenic line segment and a second cryogenic line segment capable of turning relative to each other about a pivot axis of the rotary coupling, first retention means for retaining one of the first and second cryogenic line segments in the radial direction, second retention means for retaining one of the first and second cryogenic line segments in the axial direction relative to the other one of said first and second segments, the radial retention means and the axial retention means defining said axis of rotation of the rotary coupling, said first segment comprising a vacuum-insulated double-walled female portion and said second segment comprising a vacuum-insulated double-walled male portion engaged at least in part in said female portion, a first sealing gasket being interposed between a free end of said male portion engaged in said female portion and one of the first and second retaining means, a second sealing gasket interposed between a free end of said female portion surrounding said male portion and the other one of said first and second retaining means, and heater means being disposed in the vicinity of the second gasket.

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2/ (ORIGINAL) A rotary coupling according to claim 1, wherein

the first gasket is a self-lubricating insert co-operating with

a seat associated with one of the first and second retaining

means.

3/ (ORIGINAL) A rotary coupling according to claim 2, wherein

the self-lubricating insert is made out of one of the following

materials: PTFE, PTFCE, filled graphite, PTFE-filled bronze,

filled ceramic.

4/ (ORIGINAL) A rotary coupling according to claim 2, wherein

the self-lubricating insert is provided with a slot serving to

balance pressures between the internal zone of the first and

second segments and the annular space defined between

overlapping male and female portions.

5/ (ORIGINAL) A rotary coupling according to claim 2, wherein

self-lubricating insert is provided with an induced-

elasticity device serving to distribute contact pressure over

the seat while also forming a safety valve.

6/ (ORIGINAL) A rotary coupling according to claim 1, wherein

the second gasket is a flexible wiper gasket co-operating with

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the outside surface of the male portion in the vicinity of the

radial retention means.

7/ (ORIGINAL) A rotary coupling according to claim 1, wherein

the second gasket is a rectangular section annular gasket

applied against a plane portion associated with the axial

retention means.

8/ (ORIGINAL) A rotary coupling according to claim 6, wherein

the second gasket is made of elastomer or of PTFE.

9/ (ORIGINAL) A rotary coupling according to claim 1, wherein

the heater means comprise an electrical heater device.

10/ (ORIGINAL) A rotary coupling according to claim 1, wherein

the heater means comprise a device for heating by forced

convection.

11/ (ORIGINAL) A rotary coupling according to claim 1, wherein

the first retention means in the radial direction comprise a

centering ring.

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12/ (ORIGINAL) A rotary coupling according to claim 1, wherein

the second retention means acting in the axial direction

comprise a dry-lubricated axial abutment including a large

diameter ball bearing.

13/ (ORIGINAL) A rotary coupling according to claim 1, wherein

the vacuum-insulated double-walled female portion and male

portion are made of stainless steel or of nickel superalloy.

14/ (ORIGINAL) A rotary coupling according to claim 1, wherein a

wire or a section member of insulating material is wound

helically in the internal space between the vacuum-insulated

double walls of the female and male portions.

15/ (ORIGINAL) A rotary coupling according to claim 1, wherein

the internal portion of the vacuum-insulated double walls of the

female and male portions is made of an iron alloy having about

36% nickel, such as the alloy known under the name Invar.

16/ (ORIGINAL) A rotary coupling according to claim 1, wherein

the vacuum-insulated double walls of the female and male

portions are provided with internal reinforcement formed by

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insulating separator pellets having very low thermal

conductivity.

17/ (ORIGINAL) A rotary coupling according to claim 16, wherein

metal sheets forming screens against radiation are disposed

between the vacuum-insulated double walls in alternation with

the insulating pellets.

18/ (ORIGINAL) A rotary coupling according to claim 1, wherein

conduction-cooled zeolite is integrated between the vacuum-

insulated double walls of the female and male portions.

19/ (ORIGINAL) A cryogenic fluid feed line interconnecting a

stationary assembly and a moving assembly, the line presenting

at least one degree of freedom and including at least one

cryogenic rotary coupling according to claim 1.

20/ (CURRENTLY AMENDED) A feed line according to claim 19,

having three of said cryogenic rotary couplings with parallel

axes, implemented in accordance with claim 1.

21/ (ORIGINAL) A liquid cryogenic propellant rocket engine

having at least one propellant storage tank, a turbopump for

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feeding a propellant injection device, a combustion chamber

having a nozzle throat and a nozzle diverging portion, and at

least one actuator for modifying the position of the combustion

chamber of the rocket engine relative to a stationary chamber-

supporting structure, the rocket engine including at least one

coupling according to claim 1 disposed on a line for feeding

said turbopump from said propellant storage tank or on a line

for feeding said propellant injection device from said

turbopump.

22/ (ORIGINAL) A rocket engine according to claim 21, the engine

being integrated in an upper stage of a launcher, and including

a combustion chamber of axis XX' that is substantially

perpendicular to the longitudinal axis YY' of the launcher in

the launch condition, to within $\pm 15^{\circ}$.

23/ (ORIGINAL) A rocket engine according to claim 21, having a

pivot axis situated level with the throat of the nozzle.

24/ (CURRENTLY AMENDED) A rocket engine according to claim 21,

having two turbopumps mounted in a position that is fixed

relative to the launcher and having outlet ducts for feeding the

propellant injection device, each of which is provided with at

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least one <u>said</u> cryogenic rotary coupling according to claim 1 in order to allow the rocket engine to pivot about at least one pivot axis relative to the launcher.